DOCUMENT RESUME

ED 227 425 CG 016 558

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TITLE Early Identification Using Self-Assessment in Measuring Management Potential in Young Scientists and Engineers.
PUB DATE Aug 82
NOTE 19p.; Paper presented at the Annual Convention of the American Psychological Association (90th, Washington, DC, August 23-27, 1982).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Administrator Qualifications; *Aptitude Tests; College Students; Evaluation Methods; Higher Education; Managerial Occupations; *Predictive Validity; Psychometrics; Role Models; *Self Evaluation (Individuals); Student Development; *Talent Identification; Vocational Aptitude

ABSTRACT

The demand for managers with strong technical skills has led to increased interest in the selection and development of persons who have the potential to be successful managers. To learn more about early identification of persons possessing aptitude to manage, 82 engineering and science students completed a questionnaire describing behaviors they felt were related to five management role dimensions. Their responses were scored by two trained interviewers using behaviorally based scoring guides. One year later, 21 of the students completed a management development program and were evaluated on their performance by their peers and by the program administrator. Correlations between the scored self reports (termed Referenced Assessment) and the performance scores indicated that the Referenced Assessment scores were not predictive of the interim criteria assessed. These findings suggest that the Referenced Assessment measures should not be used to assess management potential. The underlying role model and the potential for the objectively scored self assessment methodology suggest that more research be done on the self-assessment methodology and more work be done on the development of a managerial role model. (Author/JAC)

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ED227425

Early Identification Using Self-Assessment[1]

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in

Measuring Management Potential in Young Scientists and Engineers

American Psychological Association

Washington, D.C.

August 1982

Running Head: Self-Assessment

CG 016558

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Abstract

This study dealt with the early identification of persons possessing aptitude to manage. Eighty-two engineering and science students completed a questionnaire in which they described behaviors which they felt were related to five management role dimensions. Their responses were scored by two trained interviewers using behaviorally based scoring guides. Approximately one year after initial contact, 21 of these persons completed a management development program and were evaluated on their performance by their peers and by the program administrator. Correlations between the scored self reports (termed Referenced Assessment) and the performance scores indicated that the Referenced Assessment scores were not predictive of the interim criteria assessed. On the basis of these findings it was concluded that the Referenced Assessment measures should not be used to assess management potential. Further discussion was devoted to the construct validity of the underlying role model and the potential for the objectively scored self assessment methodology. It was suggested that more research be done on the self-assessment methodology and that more work be done on the development of a managerial role model.

The demand for managers with strong technical skills has been on the increase (Brush & Manners, Note 2). At the same time, the number of competent managers available may actually have been decreasing (Miner, 1974; 1977). This demand-shortage situation has led to a hightened interest in the selection and development of persons who have the potential to be successful managers. While much of this interest has focused on assessing and developing lower level managers for middle and upper level positions, a few efforts have been undertaken to assess management potential at the time that a person enters an organization (e.g., Byham, 1977) and in some cases, even before individuals graduate from college (Brush, Note 1).

This interest in early identification has led to some interesting new problems because early identification necessarily must occur before individuals have been in positions where they have been able to exhibit identifiable management behaviors. While efforts to identify junior managers for senior positions may utilize past behavior to predict future success, early identification must be done using either limited samples of management behavior or some other indicator of potential. The contrast can be made even clearer if one considers the distinction between achievement and aptitude. Concerns about promotion to higher positions may focus on past achievements of individuals in positions similar to the target position. However, when records of achievement are not available due to dissimilarities between past and future positions, identification

is only possible when aptitudes necessary in the future position are known and measured in applicants.

Problems such as this have traditionally been handled by the use of psychological aptitude tests. However, in the current climate of behaviorism and content validity, aptitude tests have been used less frequently and their use has been met with some disfavor. In addition, the reliance on psychological tests to the exclusion of other approaches is in direct opposition to the maxim that past behavior is the single best predictor of future behavior.

The combination of the need to assess aptitude and the desire to use past behavior to predict future behavior presents the researcher with a dilemma. Should one abandon the maxim stated above and rely on psychological tests or should one ignore the need for aptitude tests and attempt to predict one set of behaviors with another set of seemingly unrelated behaviors? Possibly there is some middle ground.

A technique developed by the U.S. Civil Service Commission (Note 5) to be used in the selection of budget analysts, attempted to assess aptitude for the job of a budget analyst from a review of an applicants' past achievements in totally different types of work. This process did not focus on education and experience per se, but rather concentrated on past achievements of applicants as they related to important job dimensions (Schmidt, Caplan, Bemis, Decuin, Dunn & Antone, Note 3). The approach was designed to assess the qualifications of applicants

for the budget analyst job who, "may have had less opportunity in the past to demonstrate achievement on the same or similar jobs" (Schmidt et al. Note 3, p. 9). Since this method incorporates information about past behavior while focusing on aptitude for some seemingly unrelated position it appears to be a way to solve the dilemma presented earlier, e.g., aptitude is the focus without psychological tests being used and past behavior is used to predict future behavior, but the behaviors may be different.

This paper presents an application of the Civil Service methodology in the context of early identification of management potential. An approach similar to that used for budget analysts is described and was tested among a group of college students. It was hypothesized that this methodology would in fact be a feasible alternative to psychological testing and that for the specific purpose attempted, would prove to be both reliable and valid. More specifically, it was hypothesized that the method would be feasible from an administrative standpoint and that it would produce assessments which were reliable and were predictive of successful management behavior.

Method

Subjects

Eighty-two male and female engineering and science students participated in the original study. These junior and senior students were part of a larger group of 150 students who applied for admission into an experimental management development program.

Measures

Referenced Assessment. A self-report questionnaire (referenced assessment) was designed to tap five dimensions of the managerial role model proposed by Steger and and Manners (Note 4), an overall management potential rating. The five dimensions (salesmanship, influence/control, technical competence, career defintiveness, and evaluation) were a subset of the nine dimenions currently assessed by a structured interview to screen applicants for an experimental management development program. Only five dimensions were assessed using self-assessment in an effort to reduce the time required for the applicants. The five dimensions listed above were judged to be the most important indices of management potential and/or the dimensions most easily assessed with self-assessment.

The referenced assessment instruments and scoring guides were developed in accordance with the procedures used by Schmidt et al. (Note 3) for developing an unassembled examination. Individuals were instructed to give two examples of experiences they had which related to each of the five dimensions. The

dimensions were defined for the applicants and examples of experiences were also included. The format for written responses consisted of five parts, three of which were used to score the responses: a) a statement of the problem or objective, b) what they actually did, how, and when, and c) the result.

Scoring guides similar to behaviorally anchored rating scales (Campbell, Dunnette, Arvey & Hellernik, 1973; Smith & Kendall, 1963) were constructed for each dimension. In constructing these guides, 146 summarized responses obtained from students were sorted into the five managerial dimensions by four staff members of the management development program. These same individuals then rated the responses using a seven point scale (with half-point intervals encouraged, e.g., 4.5). To be retained as anchors, agreement among the sorters had to be 75% or greater and the standard deviation for the ratings had to be 1.0 or less. The resulting scoring guides consisted of dimension definitions, scale point anchors and scoring reminders.

Criteria

Two general approaches were used to assess the performance of the students who were selected into the management development program: peer nominations and a form of supervisory rating. Eight different peer nominations were assessed, although only four are of interest here: "Who would you most want to be your manager now?","Who would you most want to be your manager in ten years?", Who will be the best managers?", and "Who do you think will be the most successful in his or her career?". Respondents

were asked to nominate their first three choices for each question. A simple sum of the nominations was computed for each of the eight questions for each respondent. Thus each of the nomination scores could range from zero to n, where n was the number of respondents. In addition to the simple sums, the first three nominations listed previously were summed to create a general management potential nomination.

The second type of criterion was a rating by the administrator of the management development program. She rated each of the participants on their overall management potential using a seven point scale similar to that used for the overall referenced assessment rating. This rating and the peer nominations were assessed at the conclusion of the management program.

Procedure

Letters were sent to the 150 students who interviewed for the management development program requesting that they complete the referenced assessment as the last phase of the application process. The students were instructed to complete the questionnaire over two or more sessions during a school break and then return them. As mentioned previously 82 students (55% response rate) returned the referenced assessments.

Upon receipt of the referenced assessments, two persons who had received interviewer training, independently scored the responses. Using the scoring guides described previously, the raters evaluated all applicants dimension by dimension. When

they had completed ratings for all of the dimensions, they rated each applicants' overall management potential.

Of the 150 students who applied for admission into the management development program, only 34 were selected into and completed the program. During the last day of the management program, the participants received the peer nomination form to complete as part of their evaluation of the program. Twenty of the nominations were returned. Following the conclusion of the management program, the administrator completed the overall management potential ratings of the 34 participants.

Results

Psychometric Properties

The means, standard deviations, ranges and interrater correlations are presented in Table 1. As indicated by the means being greater than the scale midpoint in all but one case, the ratings tended to exhibit some positive leniency. It is also apparent that range restriction occurred. With the exception of two dimension (Technical Competence and Salesmanship), the standard deviations were low for both raters. The entire range of possible scores was not used for any of the dimensions and the most restricted range occurred for the overall management potential scores.

Insert Table 1 about here

Correlations between the independent ratings by the two raters served as measures of reliability. As noted in Table 1, these correlations ranged from a low of .46 for the dimension Evaluation, to a high of .78 for Technical Competence. The average interrater agreement, r = .60, was considered moderate. While it was not surprising that the agreement for Technical Competence was higher than for the other dimensions since grade point average weighed heavily in assessments of Technical Competence, the moderate to low correlations obtained for the other dimensions indicated that the raters were using the scoring guides in different ways, a problem in need of further study.

Dimension intercorrelations were computed within ratees in order to evaluate the relative independence of the dimensions. As shown in Table 2, the intercorrelations for both raters tended to be low. The average dimension intercorrelations were .26 and .18 for rater 1 and rater 2, respectively. These overall results were interpreted as evidence against a strong halo effect, a finding which was expected given that the ratings were made dimension by dimension rather than ratee by ratee.

Insert Table 2 about here

While a general halo effect was not found, the dimensions could not be termed independent. In fact, the pattern of correlations between Career Definitiveness, Evaluation, and the remaining three dimensions suggested that three rather than five

dimensions would be sufficient in future studies, e.g., it appeared that any variance accounted for by Career Definitiveness and Evaluation could be accounted for by the other three dimensions.

Validity

As mentioned previously, two methods were used to assess management effectiveness at the end of the experimental management development program, peer nominations and an overall rating by the program's administrator. Not surprisingly, the four nomination questions were highly correlated, as shown in Table 3. All but one of the nomination questions, "be the best manager," were also significantly correlated with the overall management potential rating. Given the consistent positive relationships among the various criteria, it was concluded that they all measured some general potential for management.

Insert Table 3 about here

The predictive validity of the referenced assessment ratings was examined by correlating the ratings made in 1981 with the peer nominations and administrator's ratings made at the end of the management development program, some 16 months later. As shown in Table 4, only rater 1's ratings for the Technical Competence dimension were significantly correlated with any of the criteria studied, and even these three coefficients were suspect given that three correlations would be expected to be significant at the .05 level by chance when 72 coefficients were computed.

While it is true that the power in these analyses was quite low because only 21 of the 34 persons who completed the management development program also completed the referenced assessments, the finding of so few significant correlations was unexpected. Even if one disregards significance and focuses only on the size of the coefficients, the conclusion is the same. The referenced assessment ratings were not predictive of either the peer nominations nor the administrator's ratings.

Insert Table 4 about here

Discussion

Two general topics emerge as needing dicussion, the usefulness of the measurement instrument described in this paper, and the usefulness of measures developed in a manner similar to

that described in this paper. These issues are quite distinct because any measure has limits as to its usefulness, but approaches to the development of a measure may transcend uses. It would be inappropriate at this time to condemn the referenced assessment approach to measurement on the basis of one negative study.

Referenced Assessment: A Measure of Management Potential

In the early portion of the results, a variety of psychometric properties were discussed and they led to the conclusion that while the referenced assessment ratings were not perfect, they had some properties which suggested that they might be reasonable tools to use in predicting future managerial performance. This early optimism was quickly replaced by disappointment when it was found that these predictors were unrelated to the performance criteria used in this study. The question is, how can reasonably reliable and sound measures prove to be useless?

Since the mechanics involved in the development of these measures were modeled after those suggested by Schmidt et al. (Note 3), it is probable that the approach used was not the problem. This leaves only one reasonable explanation for the lack of validity found, that the construct measured by the referenced assessments did not match the construct measured by the criterion. Given that the criterion measures focused on general management potential and that these judgements were the result of an eight month period of observation, it is likely that

they more closely represented whatever is meant by the term management potential. To summarize at this point, the referenced assessment measures examined in this study should not be equated with measures of management potential and should not be used as predictors of managerial success.

Referenced Assessment: An Objectively Scored Means of Self-Assessment

On the basis of the validity data, one would not suggest that the measures developed for this study be used to select future managers. On the other hand, one might still be interested in developing another set of measures based on the referenced assessment methodology. The reliability of some of the dimensions was moderate, halo was low and the time required of the scorers was minimal. While there appeared to be problems with range restriction, leniency, and the assessee response rate, all of these problems may have been related to the same phenomenon, self selection. If self selection were occurring, one would expect much less than a 100 percent response rate and one would expect the respondent group to be skewed toward the high end leading to both a restricted range in the ratings and the appearance of leniency. The benefits of the referenced assessment approach (i.e., the use of past behavior to assess aptitude, the development of an objective scoring mechanism for a self-report, the reduction in assessor time required, etc.) argue for continued research with this methodology even in light of the woeful application described previously.

On the basis of our experience with the referenced assessment methodology, we suggest that others explore this approach for assessing potential. We also caution those who do continue with such research to do a thorough job analysis (as suggested initially by Schmidt et al., Note 3) prior to the construction of the instruments. Had we done so, our results might have been more positive.

In terms of future research needs, we can list at least three. As noted previously, the observed interrater agreement was moderate, thus research dealing with how to improve the scoring guides and/or train the raters would be useful. Similarly, another important area is rater accuracy, which was not even addressed in this study. Finally, the truthfulness of the respondents should also be studied. While we did ask respondents to name persons who could verify their responses, we did not try to verify the responses and we were not even sure how we would deal with situations in which verifications were not forthcoming.

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Footnotes

Portions of this study were completed by the second author to fulfill a Masters Thesis requirement under the supervision of the first author, and were presented at the 1982 meeting of the Eastern Psychological Association.